

Sustainable Design at EPA's Kansas City Science and Technology Center

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A typical laboratory uses 5 to 10 times more energy and far more water per square foot than a typical office building because of intensive ventilation requirements and other health and safety concerns. When the U.S. Environmental Protection Agency (EPA) realized that its Region 7 laboratory in Kansas City, KS, could no longer feasibly implement its mission in its existing location, the Agency decided to design and construct a new building to provide a new, quality workspace for its scientists and staff. The building employs as many energy, resource, and water-efficient characteristics as possible in its design and construction to preserve natural resources, ensure occupancy health, and serve as a model for future laboratory design.

A dedicated team of individuals and agencies, including contractors, developers, engineers, architects, EPA staff, and the U.S. General Services Administration, pursued a sustainable approach to the development and construction of EPA's new laboratory, known as the Kansas City Science & Technology Center. In August 2003, the laboratory was awarded a Gold Level sustainable design rating from the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) program—a widely recognized green building rating system. The Center serves as a model of quality workspace and sustainability to the 10 EPA regional laboratories throughout the country that provide monitoring, analytical support, and data assessments.

EPA incorporated many green features and strategies into the construction and operation of the laboratory, including

1. A unique rooftop rainwater recovery system captures and filters rainwater for use in flushing toilets; it cuts treated domestic water use by approximately 50% and reduces stormwater runoff by 40%. Since the rainwater recovery system collects more water than needed for the toilets, the excess is used to provide makeup water for the building's cooling towers. The estimated savings from this unique system is 735,000 gallons per year.

2. The initial mechanical system design chosen for the lab included variable air volume (VAV) fume hoods, VAV office ventilation, and heat recovery. Energy modeling performed on this initial design produced further economical energy conservation approaches, resulting in design additions such as zoned carbon dioxide sensors, plate-frame heat exchange recovery, and a variable-frequency-drive chiller.
3. The Solicitation for Offers (SFO) for this facility included green language to ensure that the facility and all its construction features promote energy efficiency and environmentally preferable materials and design. The SFO encouraged contractors to address energy and water conservation and other environmental factors.

The poster will highlight the laboratory's many sustainable features, specifically focusing on the rooftop rainwater recovery system, energy performance, and selection and procurement of "green" building materials. Please visit <www.epa.gov/oainttrnt/content/kc_brochure.pdf> for more detailed information.